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09/364,241	07/29/1999	ROBERT P. PARKER	02103/349001	9138

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FISH & RICHARDSON PC
225 FRANKLIN ST
BOSTON, MA 02110

EXAMINER	
TRAN, KHANH C	
ART UNIT	**PAPER NUMBER**
2631	15

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/364,241	Applicant(s) ROBERT P. PARKER	
	Examiner Khanh Tran	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The Amendment filed on 12/18/2003 has been entered. Claims 1-15 are pending in this Office action.

Response to Arguments

2. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites the limitation "said source" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 4-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imazeki U.S. Patent 4,245,348.

Regarding claim 1, Imazeki invention is directed to radio frequency receiver comprising circuit means for tuning the receiver to a plurality of frequencies within a range of frequencies which includes the selected signal and for producing an intermediate frequency signal corresponding to the frequency to which the receiver is tuned.

In column 3 lines 13-37, figure 1 illustrates a RF receiver receives an RF signal having a frequency within a range of frequencies. Imazeki further states that the frequency range may include frequencies from different designated frequency bands (e.g. VHF and UHF) to which it is desired to tune the receiver.

In column 3 lines 37-68, the RF receiver in figure 1 further includes a frequency discriminator means in the form of an audio detector 20 coupled to IF amplifier 18. The frequency discriminator is responsive the received intermediate frequency (IF) signal for developing an output signal which has a DC component directly proportional to the deviation of the IF frequency from the predetermined frequency. In column 4, lines 49-68, in accordance to one aspect of the invention, the RF receiver in figure 1 further includes a detecting means in the form of center frequency detector 30 coupled to the audio detector 20 and responsive to the DC component, developed by an audio detector 20, for developing a gating signal. The gating signal has a first value when the DC component is between

pre-selected upper and lower threshold values and has a second value when the DC component is not between the upper and lower threshold values. Imazeki further states that by selecting the upper and lower threshold values very close to each other in accordance with features of the invention, the receiver in figure 1 may be set to enable audio signal reproduction only when the receiver is tuned to or very close to the center frequency of the received signal. In light of the foregoing teachings, the step of selecting the upper and lower threshold values very close to each other forms an equivalent threshold value representative of the center frequency of a received frequency. Figure 3 illustrates the implementation of the center frequency detector 30 including a pair of voltage comparators 31 and 32 for setting the upper and lower threshold values.

Imazeki teachings do not expressly disclose the step of comparing the frequency of the desired received signal to a threshold frequency. Nevertheless, as recited above, the step of selecting the upper and lower threshold values very close to each other forms an equivalent threshold value representative of the center frequency of a received frequency. In column 6 lines 51-68, the DC component is applied to comparators 31 and 32, which produce a "low" output if the DC signal is more or less the equivalent threshold value and a "high" output if the DC signal is very close to or at the equivalent threshold value. It would have been obvious for one of ordinary skill in the art at the time the invention was made that comparators 31 and 32 perform the step of comparing the DC component, which is representative of the frequency of a received signal, with

the threshold value, which is formed by selecting the upper and lower threshold values very close to each other and represents the center frequency. It is not necessary to state a motivation since comparator, as well known in the art, perform the comparing step.

In column 5 lines 19-48, a scanner circuitry 40 in figure 2, provided between the switching circuit 23 (which is responsive to the signal developed by center frequency detector 30) and local oscillator 17, causes the variable tuning means to automatically and sequentially tune the receiver to the desired frequency which is the center frequency and stop when the scanner circuitry 40. The variable tuning means as taught by Imazeki includes the local oscillator 17 which as known in the art is utilized to tune to a frequency and produce a corresponding intermediate frequency signal. Hence, it would have been obvious for one of ordinary skill in the art at the time the invention was made that the variable tuning means causes the local oscillator 17 to tune to a frequency within the range of reception frequencies based on the comparison between the DC component and a threshold value (representative of a desired center frequency). The threshold value is more or less than the DC component, which is representative of the received frequency. Again, it is not necessary to state a motivation since the local oscillator 17 performs the tuning process.

Regarding claim 4, as recited in claim 1, comparators 31 and 32 compare the DC component with the equivalent threshold value, formed by selecting the upper and lower

threshold values very close to each other, to produce a "low" output when the DC component is more or less than the threshold, and a "high" output when the DC component is at or very close than the threshold. In the case of "low" output, a scanning means in the form of scanner circuitry 40 causes the variable tuning means to automatically and sequentially tune the local oscillator to the desired frequency. Imazeki does not expressly disclose applying one of at least frequency offsets to the received frequency as claimed in the patent application. However, since adjusting the received frequency close to a desired frequency requires adding or subtracting a frequency offset value, one of ordinary skill in the art will appreciate that scanner circuitry applies a frequency offset to add or subtract to the received frequency based on results from the comparison between DC component and the threshold value. Hence, there are at least two frequency offsets for adding and subtracting in light of the aforementioned reasoning.

Regarding claim 5, the threshold value is representative of the center frequency of a desired frequency. One of ordinary skill in the art will appreciate that there are numerous cases that both frequency offsets have the same magnitude, e.g. received frequency at either end of frequency range.

Regarding claim 6, a range of frequencies is inherently bounded by high and low frequency values, defined by F_{HIGH} and F_{LOW} respectively. Since a threshold value in Imazeki invention is representative of center frequency, one of ordinary skill in the art

will appreciate that mathematically, the first offset and second offset are equal or less than $(F_{HIGH} - F_{LOW}) / 2$.

Regarding claim 7, since there is no specific range of frequencies in the claim, one of ordinary skill in the art will appreciate that the first and second frequency offsets are inherently equal to an intermediate frequency of the receiver.

Regarding claim 8, said claim is rejected using similar argument as in claim 1 because both claims have similar scope. Furthermore, the claimed threshold frequency is the center frequency, which is taught in Imazeki invention.

Regarding claim 9, said claim is rejected using similar argument as in claim 1 because both claims have similar scope. Furthermore, in column 3 lines 18-32, Imazeki invention applies to frequency bands such as VHF and UHF. The range of frequencies as claimed in the patent application is within UHF band that covers from 2300 MHz to 2900 Mhz.

Regarding claims 10-11, referring back to figure 2, an RF receiver includes a local oscillator 17, an antenna 12 for receiving an RF signal within a predetermined range of frequencies, an audio detector 20, detecting means in the form of a center frequency detector 30.

Imazeki does not expressly disclose a source of signal representative of the frequency of a desired signal, and a frequency controller for providing a frequency control signal as claimed in the patent application. However, Imazeki discloses center frequency detector 30 including a pair of voltage comparators 31 32 that are set by potentiometers 35 36. Since potentiometers 35 36 are adjusted to a pre-selected voltage output representative of center frequency of a desired signal, it would have been obvious for one of ordinary skill in the art at the time the invention was made that potentiometers 35 36 are the source of signal representative of the frequency of a desired signal.

In column 6 lines 1-25, detecting means coupled to local oscillator 17 through the scanner circuitry 40 and potentiometers 35 36 develops a control signal in responsive to a DC signal component developed by detector 20. The control signal controls scanning means in the form of a scanner circuitry 40 through switching means in the form of switching circuit 23 for stopping the scanning only when the control signal has a value corresponding to the receiver being tuned to the frequency of a desired signal. Scanner circuitry 40 causes the local oscillator 17 to tune the receiver to a desired frequency. Hence, one of ordinary skill in the art will appreciate that detecting means is equivalent to a frequency controller as claimed in the patent application to due to similar functionalities. Furthermore, a mixer and filter 16 always sets the frequency of the local oscillator 17 to a frequency that differs from the frequency of a desired signal by an IF frequency and is within the predetermined range of frequencies.

Regarding claim 12, in column 5 lines 19-48, Imazeki discloses the scanner receiver embodiment in figure 2 including variable tuning means to selectively and sequentially tune the receiver to the predetermined frequencies and produce a corresponding IF signal. Imazeki states that several known techniques for implementing variable tuning means including programmable frequency synthesizer circuits for the local oscillator to tune the receiver to the desired frequencies. Imazeki discloses in the background of the invention that a synthesized frequency generating circuit sometimes takes the form of a phase-locked loop circuitry. Hence, one of ordinary skill in the art will appreciate that a phase-locked loop could be implemented in the local oscillator as claimed in the patent application.

Regarding claim 13, the scope of said claim is similar to that of claims 10-11. Rejection arguments of claims 10-11 also apply here. Furthermore, in column 3 lines 18-32, Imazeki invention applies to frequency bands such as VHF and UHF. The range of frequencies as claimed in the patent application is within UHF band that covers from 2300 MHz to 2900 Mhz.

5. Claims 2-3 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al. U.S. Patent 4,959,872.

Regarding claim 2, in column 6 line 61 through column 7 line 60, figure 4 illustrates an embodiment of a super high frequency (SHF) band FM receiver in

Imai et al. invention. FM receiver includes an input terminal 10a for receiving a first IF signal, a FM demodulator 40 supplying demodulation output to a second low pass filter (LPF) 42.

Output of LPF 42 is representative of demodulation error voltage Vde, which is converted to a digital data value Dde through a 1st level shifter 66 and a first A/D converter 68. A reference voltage source 46a, corresponding to a center frequency of the second IF signal, is provided and is converted to a digital data value Dref through a 2nd level shifter 70 and a second A/D converter 72. Imai et al. does not expressly disclose the step of comparing the frequency of the desired received signal to a threshold frequency as claimed in the patent application. Nevertheless, Imai et al. further discloses that the 1st level shifter 66 and the 2nd level shifter 70 match the demodulation error voltage Vde to the reference voltage Vref. A microcomputer 48 calculates a demodulation sensibility Sd based on the digital data value Dde and the digital data value Dref, and generates an automatic fine-tuning (AFT) data signal based on the result of the calculation to control the second local oscillator 24 to set a reception of the desired channel in the FM receiver. From the aforementioned teachings, one of ordinary skill in the art will appreciate that the 1st level shifter 66 and the 2nd level shifter 70 performs the comparison step as claimed in the patent application. Also, it would have been obvious for one of ordinary skill in the art at the time the invention was made that the microcomputer 48 supplies a channel tuning data to

tune the second oscillator 24 to a frequency of the desired channel based on the comparison step of Dde and Dref.

Imai et al. does not expressly disclose the step of converting the desired received signal frequency to an index value as claimed in the patent application. However, one of ordinary skill in the art would appreciate that the process of converting the demodulation error voltage Vde into a digital data value Dde would be equivalent to converting the desired received signal frequency to an index value since the converted digital data value is representative of the desired received signal frequency and the digital data value of reference voltage Vref is representative of center frequency of desired channel frequency. The SHF band carries a set of channels, hence, the received digital data value Dde would represent one of channels in the SHF band.

Regarding claim 3, claims 2-3 have similar scope, hence, the same rejection argument of claim 2 applies here. Imai et al. does not expressly disclose the step of representing the threshold frequency as an index value as claimed in the patent application. However, one of ordinary skill in the art would appreciate that converting the voltage reference Vde, corresponding to the center frequency of a desired channel frequency, into a digital data value Dref would be equivalent to representing the threshold frequency as an index value. Since the SHF band carries a set of channels, a voltage reference Vde could be set to represent a center frequency of each channel in the SHF band.

Regarding claim 14, claims 2 and 14 have similar scope, hence, the same rejection argument of claim 2 applies here. As shown in figure 4, the SHF band FM tuner 42 in figure 4 includes an input terminal 10a, a local oscillator 24, a mixer 22, and a FM demodulator. The input terminal 10a, mixer 22, and a FM demodulator constitute a signal path as claimed in the patent application. One of ordinary skill in the art would appreciate that the components 2nd LPF 42, 1st level shifter, 1st A/D converter 68, reference voltage source 46a, 2nd level shifter 70, 2nd A/D converter, microcomputer 48 form the frequency controller as claimed in the patent application and those components are coupled between signal path and 2nd local oscillator. With the foregoing reasoning, microcomputer 48 corresponds to the microprocessor as claimed in the patent application.

Regarding claim 15, Imai et al. does not expressly disclose the microprocessor causes the frequency controller to add frequency offset values as claimed in the patent application. Nevertheless, Imai et al. teaches in column 7 lines 16-24 that the microcomputer 48 calculates a demodulation sensibility Sd based on digital signals Dde, corresponding to a received frequency, and Dref, corresponding to a reference voltage representative of a center frequency of a desired channel. The microcomputer 48 generates an automatic frequency tuning (AFT) data signal Daft based on the result of the calculation to control the second local oscillator 24. From the foregoing teachings, one of ordinary skill in the art would appreciate that the microcomputer 48 would

generate a Daft to add a frequency offset if Dde is less than a Dref and add another frequency offset if Dde is more than a Dref.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 703-305-2384. The examiner can normally be reached on Tuesday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 703-306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

TESFALDET BOCURE
PRIMARY EXAMINER